

Role of wildlife and environmental awareness in developing conservation aptitude among students around Corbett National Park, Uttarakhand, India.

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ABSTRACT

Present study was carried out to estimate the existing and improved awareness level of students across schools of Ramnagar city. A total of five of each government and private schools were selected for surveying twice around Corbett National Park from August 2012 to December 2013. A total of 20 students were selected from classes 6th to class 12th from each school through stratified random sampling. The data obtained was analyzed through MS Excel 2007 and Software R. Chi square test and simple linear regression estimated the relation between different variables. Remarkable improvement in schools was seen through the study.

Keywords: Awareness, Corbett, environment, questionnaire, schools

INTRODUCTION

Environment awareness is recently becoming one of the most advanced areas of research. It is becoming a topic of interest for many researchers and scientific institutions during the past two decades [1]. Over the years we have over utilized many of our natural resources which include wildlife. It is extremely essential to provide awareness of our natural resources and their conservation to our upcoming generations [2]. Many national and international government and non-government organizations are presently working for the same cause of imparting wildlife and environmental awareness to young minds.

Several studies have been carried out for assessing and comparing awareness level in students and teachers of various schools all across the world. The first similar study was carried out by Deopuria in 1984 [3]. He compared teaching of science through environmental and traditional approaches in different schools of Madhya Pradesh. Later Gupta (1986), attempted to develop a tool, which can measure the attitude of teachers towards Environmental Education (EE) [4]. Similarly, Biswas (1990) carried out

a study to assess attitude of secondary school students towards environment in Itanagar [5].

Few years later similar approach was carried out in 1990 where a study on EE among students along with attitude of Secondary and Higher Secondary School students and teachers in Rajasthan was carried out [6].

With rapid decrease in most of our natural resources, such research works have increased in numbers. Most studies in India deal with assessing attitude of students towards EE and its implementation [1,7,8,9,10,11,12,13,14,15,16].

Environmental and wildlife conservation studies are not limited to India. Many researchers all across the globe are working in this regard. Popular studies have been conducted in USA [17,18,19,20,21,22,23,24,25,26,27,28,29], Asia [2,30,31,32,33,34,35,36,37] Africa [38,39,40,41] and Australia [42]

Present study was carried out to estimate the existing awareness level of students across Ramnagar City (around Corbett

National Park) and assess the improvement in that level after conducting awareness activities in same schools. Bradley et al., (1999) conducted a similar study [43], while some other were focused on providing EE to various schools across India and develop an aware and responsible behavior among youth of the nation [44,45,46,47,48,49,50,51]

In the present study pre and post questionnaire assessment was conducted among students to assess their level of improvement in relation to environmental (wildlife) awareness. The present study

aimed to assess the role of awareness activities in development of wildlife/environmental awareness level in school children.

STUDY AREA

The Corbett National Park (CNP) is situated at the foothills of the Western Himalayas in the district of Nainital and Pauri Garhwal in Uttarakhand, India at Latitudes 29°25–9°40' N and Longitude 78°5–79° 5' E (Fig 1a). CNP was named after Mr. Jim Corbett who was a legendary hunter and

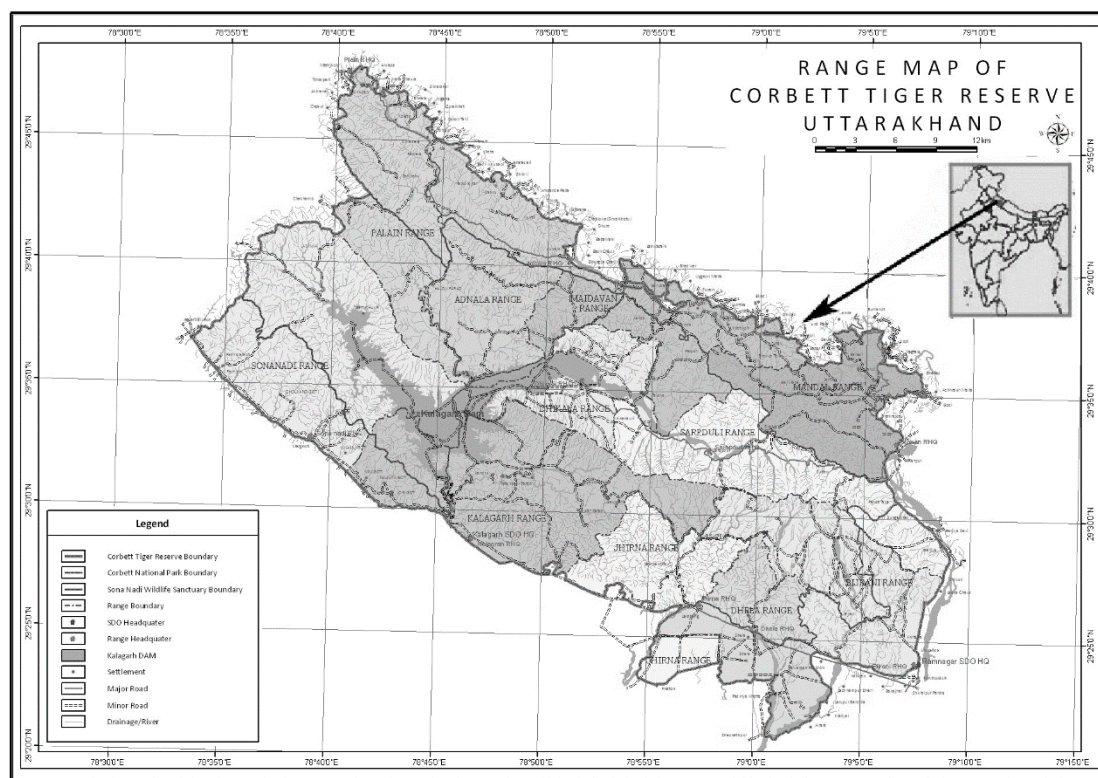


Fig 1a. Map of the study areas showing selected schools around Corbett National Park (CNP)

naturalist and had helped in marking out the park's boundaries and setting it up [52].

The area of the National Park is 520.82 km². The area of the reserve comprises of Sonanadi Wildlife Sanctuary (301.18 km²) and buffer area (466.32 km²) making it a total of 1288.32 km² [53]. In 1973–1974, under the ‘Project Tiger’ of the Government

of India, it was designated as a ‘Tiger Reserve’, together with Sonanadi Wildlife Sanctuary and it now holds one of the highest densities of tigers in Indian Tiger Reserves [54]

The vegetation of CNP is a mixture of dry and moist deciduous forest, scrub savannah and alluvial grassland. Hence, the forest

supports rich floral and faunal diversity [55]. Five broad vegetation communities are found in the area [56]: (1) Sal (*Shorea robusta*)-dominated forest, (2) Sal mixed forest, (3) riverine forest, (4) mixed or miscellaneous forest, and (5) plantation. Further two more vegetation types, namely grassland and open scrub, are also found in this area. The most dominant and widely distributed species is *Shorea robusta* followed by *Mallotus philippensis* and *Syzygium cumini*. Plantations of *Tectona grandis* and *Dalbergia sissoo* is also one of the major characteristic of the landscape. The park is home to almost 50 species of mammals, 575 species of birds, 33 species of reptiles, and 7 species of amphibians. The park has a high density of tigers (*Panthera tigris*) [54] and a sizeable population of Asian elephants (*Elephas maximus*) [52,57].

There is no human settlement within the CNP, however there are 92 revenue villages situated within 3 km of the CNP boundary [52]. The density of the people in the area is 225 persons km² for Nainital district with average literacy rate of 83.88 [58]. There is extreme pressure on the forests of CNP due to the adjoining villages since most of the people living around CNP depend on forests of the buffer zone for their requirement of fuel wood, fodder and for grazing their livestock. The village residents mostly practice agriculture. About 31% to 50% of the total income of villagers depends on forests [52]. Even after the making the National Park, a human habitation free area, few villages were still left at the fringes of the CNP resulting in regular human – wildlife conflict cases in terms of crop raiding, livestock predation and loss of both wild animals and human life [52].

Since most of the village population is dependent on the forest, conservation initiatives needed to be designed accordingly. Hence, an initiative was carried out in the present study to educate

the children and youth of the area for understanding the need of conservation of environment and wildlife.

METHODOLOGY

A total of 10 schools (5 government schools and 5 private schools) were selected from different Forest divisions around CNP (Table 1). These schools were surveyed twice during the study period (August 2012 to December 2013). A pre-awareness questionnaire survey was conducted in all the schools to obtain baseline information about their current awareness status in relation to nature conservation. Later, a series of awareness programs were conducted throughout the year such as nature trails, camps, wildlife movie screening, game shows, lectures and provision of educational material. A post-awareness questionnaire survey was then conducted with the similar methodology to avoid bias (Fig 1b).

The students involved were from class 6th to class 12th. Stratified random sampling was conducted and every third student was given the questionnaire of 20 questions to solve. A total of such 20 students were selected. For reducing gender bias, a single school each for 'only boys' and 'only girls' was selected.

The data obtained was analyzed through MS Excel 2007 to determine the percent improvement in students. Chi square test was carried out to estimate the difference in knowledge level of both male and female students. Chi square test and simple linear regression [59] with Software "R" [60] was also carried out to analyze various variables related to data.

RESULTS

1. Overall assessment of students

Interesting developments were observed from this study. It was observed that all the students improved notably in terms of their nature conservation knowledge (Fig 2.).

More than at least 10% improvement was observed in all the schools.

It was observed that the maximum improvement in knowledge gain was seen in Dayanand Bal Vidya Mandir (DBVM),

Ramnagar (42%) followed by Government Girls High School (GGHS), Sawaldeh (39.5%), Government Inter College (GIC), Gaujani (35.75%), Pushpak Bal

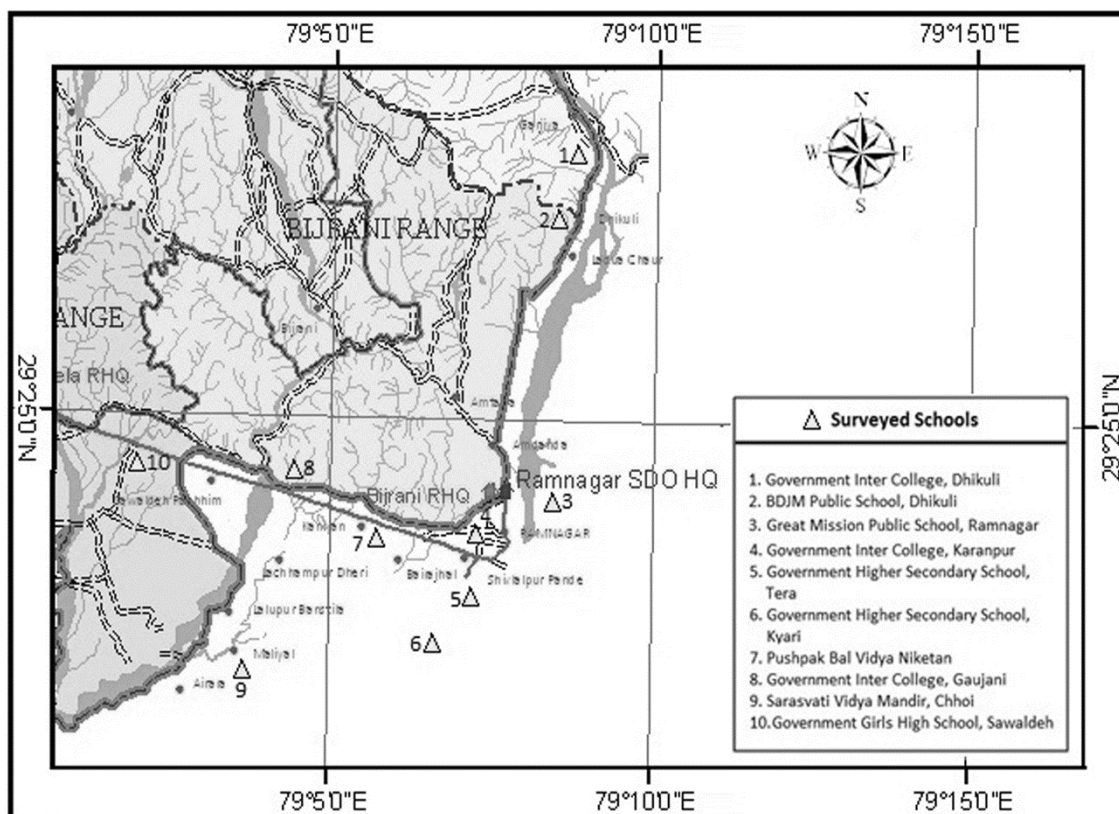


Fig 1b. Intensive study area with surveyed schools.

Table 1. Details of schools selected for conducting the study.

| S.No | Name of School | Range | Forest Division |
|------|----------------------------|-----------|----------------------------|
| 1 | GIC, Gaujani | Bijrani | Corbett Tiger Reserve |
| 2 | GHSS, Tera | Kosi | Ramnagar Forest Division |
| 3 | SVM, Chhoi | Belparao | Ramnagar Forest Division |
| 4 | GIC, Dhikuli | Bijrani | Corbett Tiger Reserve |
| 5 | DBVM, Ramnagar | Ramnagar | Ramnagar Forest Division |
| 6 | GM Public School, Ramnagar | Aampokhra | Terai West Forest Division |
| 7 | GGHS, Sawaldeh | Dhela | Ramnagar Forest Division |

| | | | |
|----|---------------------|----------|--------------------------|
| 8 | PBVN,Ramnagar | Kosi | Ramnagar Municipalty |
| 9 | GHSS, Kyari | Belparao | Ramnagar Forest Division |
| 10 | BDJM school,Dhikuli | Kosi | Ramnagar Forest Division |

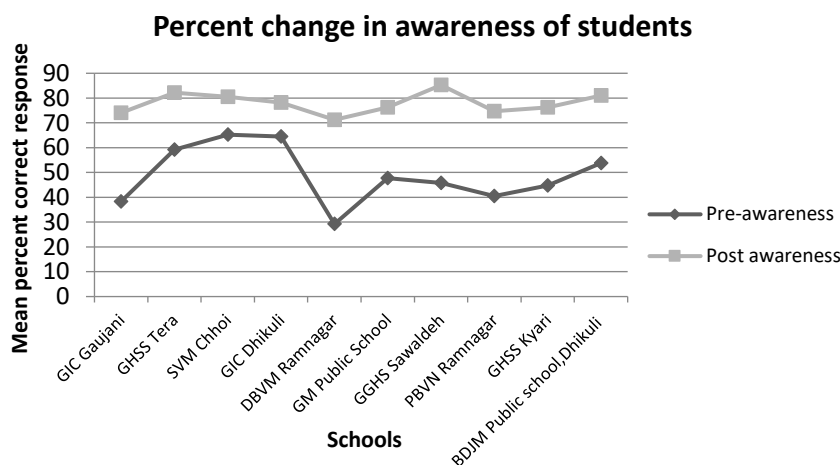


Fig 2. Percent change in awareness level of students for nature conservation in 10 selected schools around CNP.

Vidhya Niketan (PBVN), Ramnagar (34.25%) and so on (Fig 3).

The least amount of improvement was seen in Government Inter College (GIC), Dhikuli (13.75%) where the initial and final average percentage correct answers of student were comparable.

It was observed that there was no significant difference between improvement in knowledge of government and private schools before and after conducting awareness program as per Chi-square test (Table 2).

The results illustrated that there is no significant difference in the awareness level of government and private schools before and after conducting awareness activities. It is therefore not necessary that schools with more facilities (private schools) had more knowledge or improved more than the government schools.

Table 2. Results of Chi square test for checking difference in knowledge or improvement in government and private schools around CNP through Software R ($p < 0.05$).

| S. No. | Assessment | χ^2 | p-value |
|--------|----------------|----------|---------|
| 1. | Pre Awareness | 3.84 | 0.431 |
| 2. | Post Awareness | 0.28 | 0.991 |

2. Level of awareness in different age class

Students were selected randomly from classes 6th to 12th in all the schools. Therefore, the students of different age groups were covered during the study. To effectively concise the data, age classes of 10-12, 13-15 and 16-19 were formed and the data for the selected age class was analyzed (Table 3).

Table 3. Total Number of students selected randomly from different age class for conducting the survey in schools around CNP.

| S. No. | Age class | Number of Students | |
|--------|--------------|--------------------|----------------|
| | | Pre awareness | Post awareness |
| 1. | 10-12 yrs | 56 | 79 |
| 2. | 13-15 yrs | 120 | 92 |
| 3. | 16-19 yrs | 24 | 29 |
| | Total | 200 | 200 |

It was observed that the students of different age classes demonstrated different level of improvement through these surveys (Fig 4 and 5). The highest percentage of correct responses were received from the age class of 16 to 19 years both before (56.73%) and after (85.63%) implementation of various awareness

programs. It was followed by students from the age class of 13-15 years (48.68% and 78.96%) and 10-12 years (42.86% and 73.51%). This result suggests that the knowledge of children depends on their age and level of experience .

However, it is interesting to note that the maximum amount of improvement was observed in the age group of 10-12 years (31.15%). This suggests that the younger age groups have sharper memory and are willing to inculcate new knowledge in them .

Simple linear regression was calculated in R Software to understand the relation between

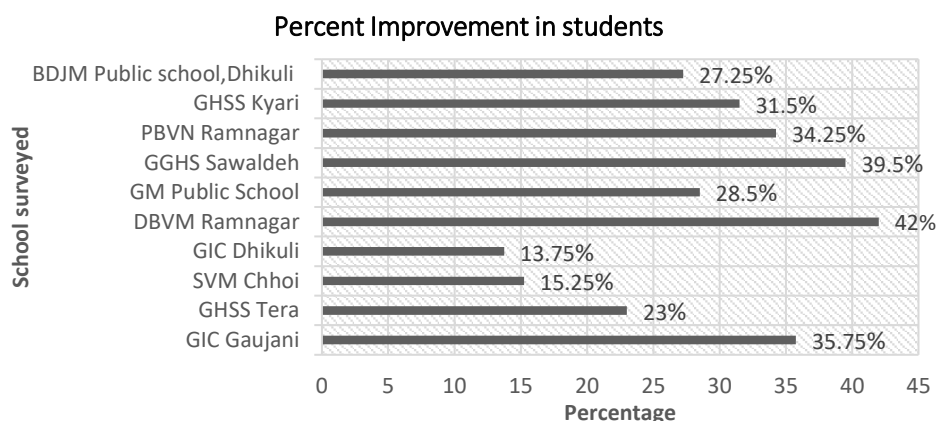


Fig 3. Percent improvement among students regarding nature conservation knowledge in 10 selected schools around CNP.

each age class before and after conducting awareness activities in their schools. The results obtained showed that initially all the age class had a very limited knowledge of wildlife/environment conservation. However, soon after attending various awareness activities conducted, the same

respective age classes showed significant improvement (Table 4). Therefore, the present study revealed that there was a significant change in awareness level of students in all age classes before and after conducting awareness activities (Fig 6a-6f).

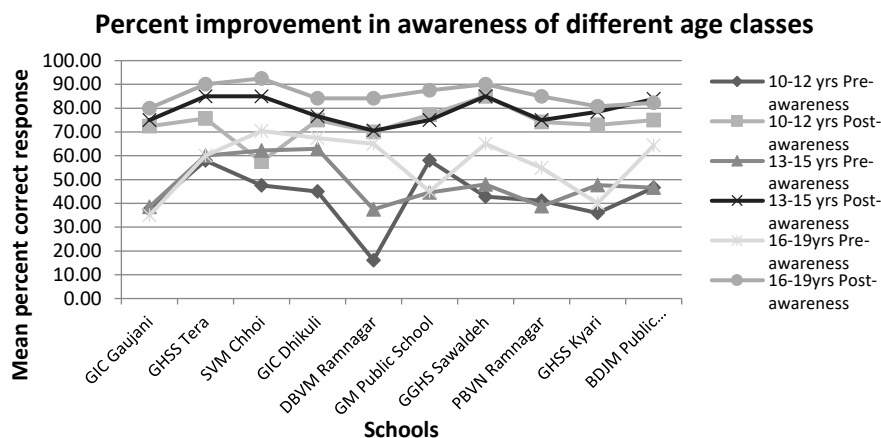


Fig 4. Percent improvement demonstrated by three age classes after conducting awareness activities in schools around CNP.

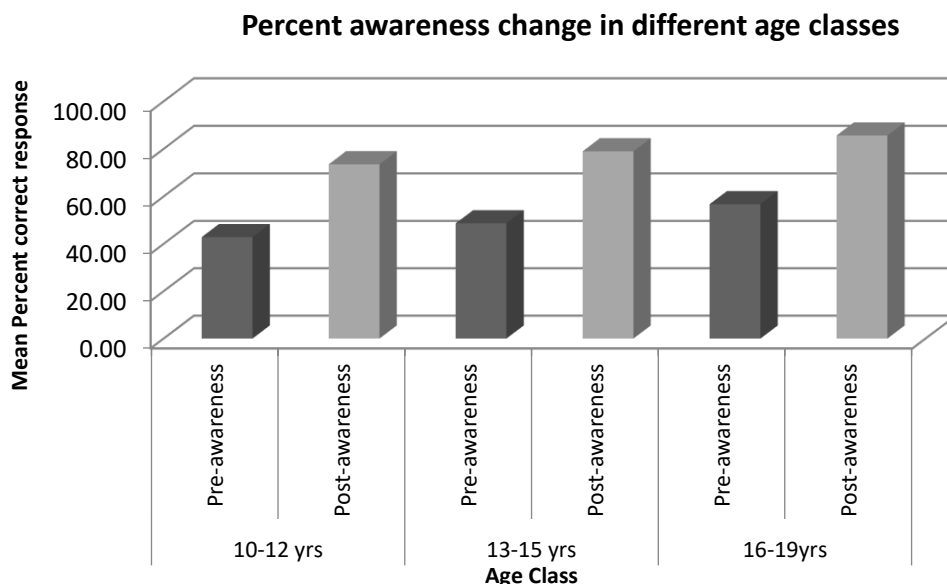
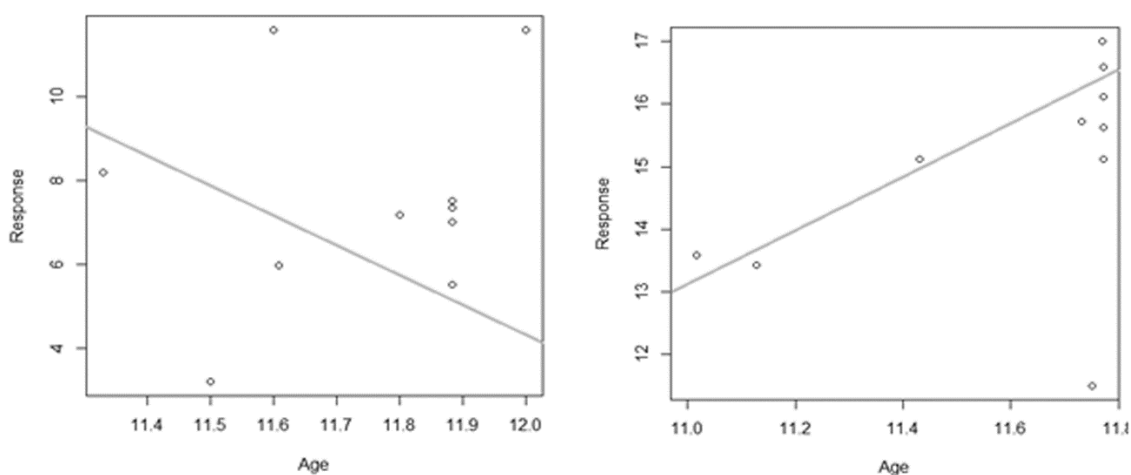


Fig 5. A comparative study of different age class in terms of their original level of knowledge and knowledge after organizing awareness activities in schools around CNP.



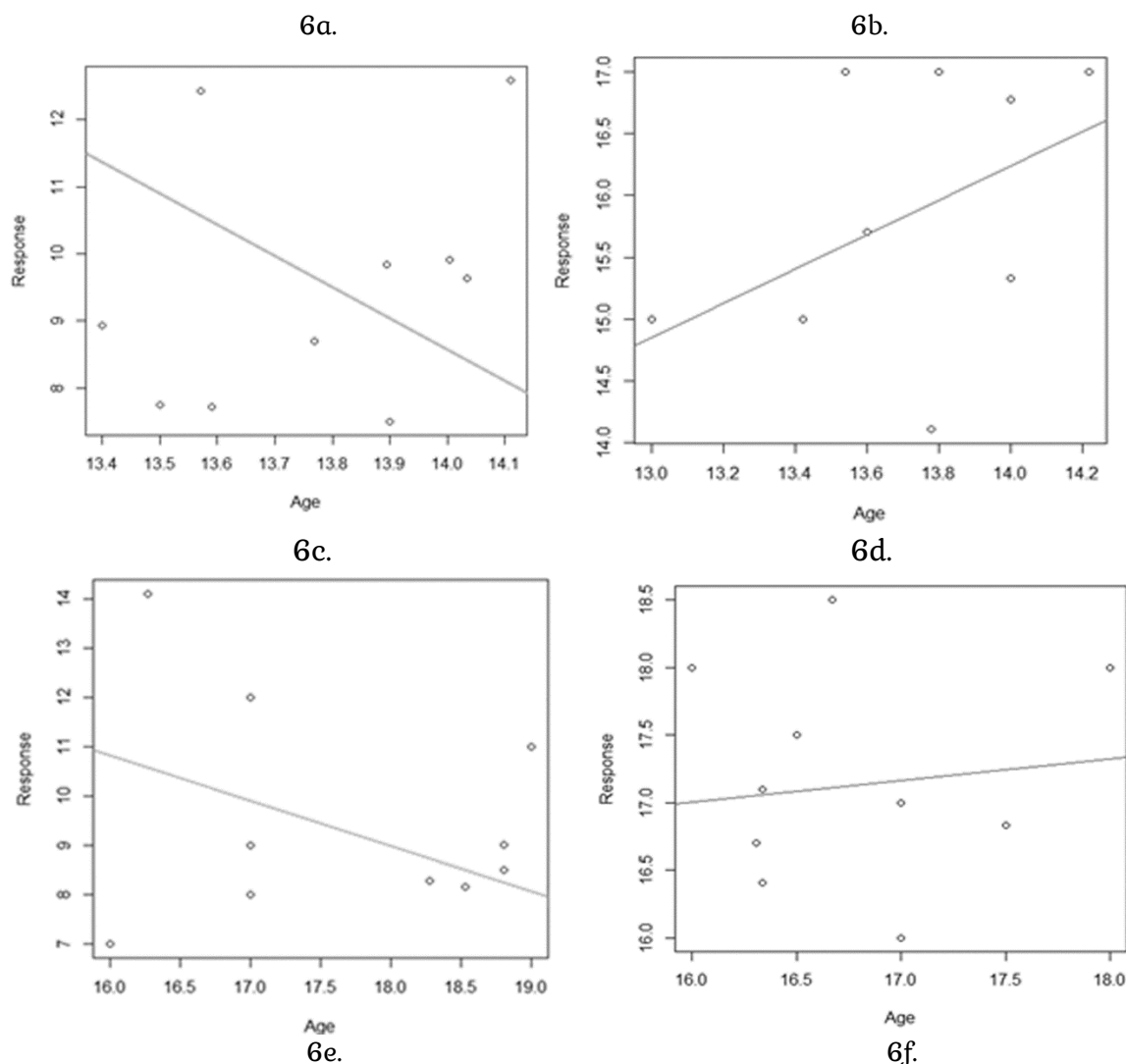


Fig 6. Regression plots for illustrating knowledge level in three age groups (a,b) 10-12 years, (c,d) 13-15 years and (e,f) 16-19 years before and after conducting awareness activities in schools around CNP.

a. Legend of School Surveyed

- | | |
|---------------------------------|---|
| 1. GIC Gaujani | - Government Inter College, Gaujani |
| 2. GHSS Tera | - Government Higher Secondary School, Tera |
| 3. SVM Chhoi | - Sarasvati Vidya Mandir, Chhoi |
| 4. GIC Dhikuli | - Government Inter College, Dhikuli |
| 5. DBVM Ramnagar | - Dayanand Bal Vidya Mandir, Ramnagar |
| 6. GM Public School | - Great Mission Public School, Ramnagar |
| 7. GGHS Sawalده | - Government Girl's High School, Sawalده |
| 8. PBVN Ramnagar | - Puspak Bal Vidya Niketan, Ramnagar |
| 9. GHSS Kyari | - Government Higher Secondary School, Kyari |
| 10. BDJM Public School, Dhikuli | - BDJM Public School, Dhikuli |

Table 4. Values of simple linear regression coefficients (adjusted R^2) for checking the relation between various age classes and their knowledge of environment/wildlife conservation before and after conducting awareness activities in schools around CNP.

| S.No. | Age group | Pre assessment | | Post assessment | |
|-------|-----------|----------------|---------|-----------------|---------|
| | | Adjusted R^2 | p value | Adjusted R^2 | p value |
| 1 | 10-12 yrs | -0.52 | 0.31 | 0.66 | 0.77 |
| 2 | 13-15 yrs | -0.60 | 0.41 | 0.53 | 0.78 |
| 3 | 16-19 yrs | -0.33 | 0.75 | 0.48 | 0.75 |

3. Estimating gender influenced knowledge gain

Present study was also focused to determine whether different gender influences level of knowledge improvement. Therefore, both male and female students were assessed for their knowledge on wildlife/environment conservation. A total of 198 male students and 202 female students were evaluated based on their answers to the pre awareness and post awareness questionnaires. One school each for 'only male' and 'only female' students was also selected to avoid any bias.

It was observed that over all, male students possessed more knowledge regarding nature conservation both before (51.04%)

and after (78.59%) conducting awareness activities than female students (48.02% and 76.35%). However, female students showed better improvement in their knowledge gain (28.34%) than male students (27.55%) (Fig 7). Chi square test results showed no significant difference in the knowledge among male and female students before imparting conservation awareness to them.

However, there was a change after conducting awareness activities throughout the schools. The results indicate that the post awareness questionnaire showed significant difference in the male and female knowledge gain for nature

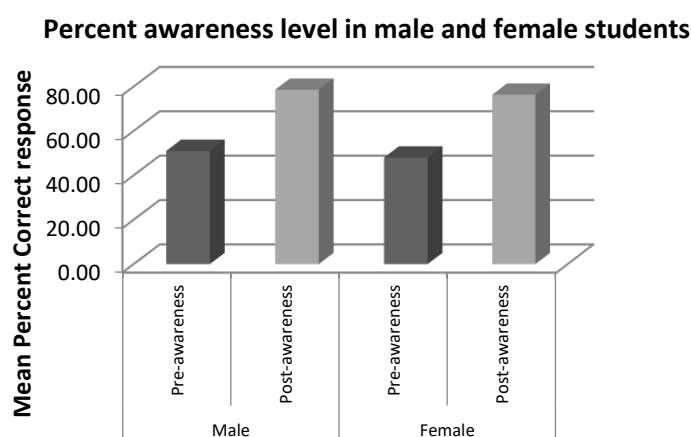


Fig 7. Comparison of percent correct responses of male and female students before and after organizing awareness activities in schools around CNP.

conservation (Table 5). It could be attributed to the fact that male students were more attentive during the sessions and accordingly they displayed it more on the post awareness survey.

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Table 5. Results of Chi square test for testing difference in knowledge or improvement in male and female students of schools around CNP through Software R ($p < 0.05$).

| S. No. | Assessment | χ^2 | p-value |
|--------|----------------|----------|---------|
| 1. | Pre Awareness | 12.77 | 0.17 |
| 2. | Post Awareness | 18.37 | 0.03 |

DISCUSSION AND CONCLUSION

Unlike few studies which reported that students had high level of Environmental Attitude in their respective study areas [5,6,29], The students in schools around Corbett National Park improved tremendously in their conservation knowledge only after conducting various awareness activities of their interest.

The environment education in all the schools around CNP is essential irrespective of its status of being a government or private school. The students of all kinds of schools are almost equal in their environmental knowledge. Even though environment conservation is a part of curriculum in some schools, it is important to involve the students in practical exercises to make them feel involved. Once they feel and accept their responsibility of conserving the environment, they show marked improvement in their habits and temperament.

Present study also showed that male students were more accepting towards conservation knowledge than female students. It almost coincides with few previous studies [10,61] which revealed that male students had better environmental awareness level than female students. However, a study showed female students had better environmental awareness level

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than male students [6]. On the other hand few researchers such as had also reported that sex had no impact on Environmental Awareness of students [12,14,62].

Since the present study covered a smaller study area to conduct the surveys, long term study in CNP is recommended which may prove to be instrumental in conservation approaches. There are many schools around CNP where students possess less conservation knowledge which could prove to be detrimental for the forest in the long run. Students need to know the harmful effects of pollution, non degradable pollutants like plastics and overuse of natural resources. Unless the locals and youth are aware to conserve its nature, none of the organizations alone can prevent adversity on the planet.

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Details of field work and data collection

The field work was conducted in the year 2011-2013 while the author was working at The Corbett Foundation, Ramnagar, Uttarakhand, India. The work bears approval of host/relevant authorities for publishing as a research article and any queries regarding the research work may be directed to the author.



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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mrs. Zaara Kidwai, has worked as Programme Officer (Awareness Division) in The Corbett Foundation (TCF) from November 2011 until January 2013. During her tenure she collected the data for educational awareness among children from different schools around Corbett National Park. She was also responsible for conducting waterfowl census and nature walks with the students under different programs conducted by TCF.



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